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# C-A OPERATIONS PROCEDURES MANUAL

## ATTACHMENT

### 8.3.3.a Layout and List of the RHIC Warm Beam Vacuum Sections

C-A-OPM Procedures in which this Attachment is used.		
8.3.3		

### Hand Processed Changes

<u>HPC No.</u>	<u>Date</u>	<u>Page Nos.</u>	<u>Initials</u>
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Approved: \_\_\_\_\_ *Signature on File* \_\_\_\_\_  
 Collider-Accelerator Department Chairman Date

H. Hseuh

### 8.3.3.a Layout of the RHIC Warm Beam Vacuum Sections

There are 52 warm sections, of which 48 are covered by this OPM. Each warm section has length ranging from 4 m for the storage cavity regions to 34 m for the standard Q3-Q4 regions.

The hardware layout of a typical warm section is depicted in the following figure. Each warm section is bracketed by two rf-shielded gate valves, pumped by sputter ion pumps and monitored with cold cathode gauges and Pirani gauges. All the pumps, gauges and gate valves are connected, through long cables, to the vacuum instruments located at the six service building control rooms.

The status and control of the gate valves, pumps and gauges are accessible from the RHIC Vacuum Pet pages and from the individual instrument chassis located in the six service building control rooms.

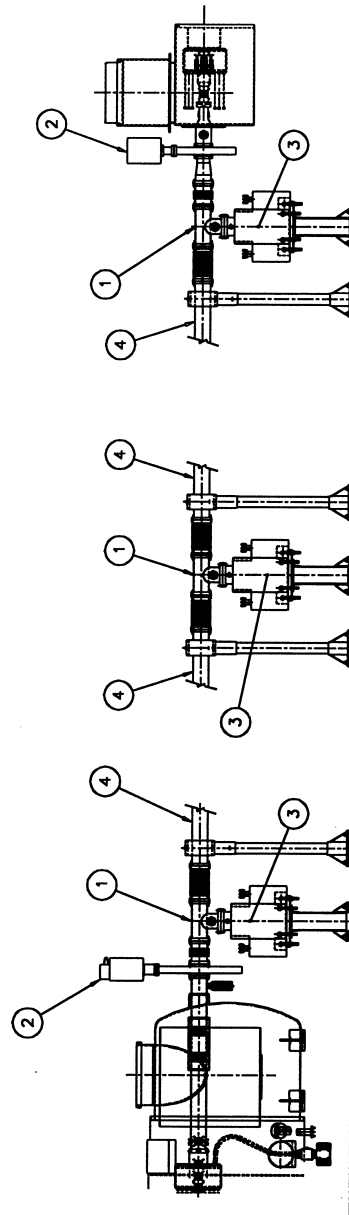
Each warm section has a manual 1-1/2" all-metal right-angle valve mounted on the pump tee for roughing or bleedup. This manual valve shall be used to bleed up the warm section to ambient pressure.

#### List of RHIC Warm Beam Vacuum Sections

<u>Type</u>	<u>Name</u>	<u>Location(s)</u>	<u>Length</u>	<u>Qty</u>
DX-to-DX	IP*	IP2, 4, 6, 8, 10, 12	17 m	6
DX-to-D0	DX-D0	All Sectors 1-12	13 m	12
Standard Warm Bore	Q3-Q4	YO1, BI1, YI2, BO2 BO3, YI3, BI9, YI10 YI11, BO11, YO12, B112	34 m	12
Q3-to-DU3	Q3-DU3	YO5, BI5, YI6, BO6 YI7, BO7, YO8, BI8	22 m	8
Q7-to-Q8	Q7-Q8	YO5, BO6	16 m	2
Q9-to-D9	Q9-D9	YO5, BO6	7 m	2
RF Q3-to-Q4	Q3-Q4	YO4, BI4	4 m to 17 m	6
Dump Q3-to-Q4	Q3-Q4	YO9, BO10	14 m, 20 m	4

\*Warm sections at Interaction Point IP2, IP6, IP8 and IP10 are not covered by this procedure. Refer to warm bore assembly procedures of the experimental regions for detail.

Layout of Typical Q3-Q4(or DU3) Warm Section



- ① R.F. Shielded Pump Tee with CCG, Pirani & 1-1/2" All Metal Valve
- ② R.F. Shielded Gate Valve
- ③ Sputter Ion Pump
- ④ Beamtube and R.F. Shielded Bellows